

CLAIMS:

1. A video signal distribution system, the system comprising
 - a video stream source (10) arranged to generate a video stream and transmit the video stream to a medium (14), the video stream source (10) being arranged to include, in the data stream, an encrypted video signal, control word information for decrypting the video signal and fee information indicative of fees for viewing respective parts of the video signal;
 - a plurality of video reproduction apparatuses (12) coupled to the medium (14), each of the video reproduction apparatuses (12) comprising
 - a control word derivation unit (125) with an input coupled to the medium (14) and a control word output, and arranged to supply control words derived from the control word information;
 - a video signal decryption device (121) having a video input coupled to the medium (14) and a control word input coupled to the control word output, and arranged to decrypt the video information using the control words;
 - a credit management unit comprising a credit memory (128), and arranged to provide enabling control information to enable or disable supply of the control words, dependent on whether the credit memory (128) indicates the availability of more than a threshold amount of credit, and to reduce the amount of credit in the credit memory (128) according to the fee information for the part of the video signal for the decoding of which the control words are supplied.
- 20 2. A video signal distribution system according to Claim 1, wherein the control word derivation unit (125) of each of the video reproduction apparatuses (12) has access to secret information in the video reproduction apparatus concerned, wherein the video stream source (10) is arranged to insert key information in the stream accessibly for all of said video reproduction apparatuses simultaneously, the control word derivation unit (125) in each video reproduction apparatus (12) being arranged to generate control word decryption keys from said part of the key information and the secret information, and to use the control word decryption keys to decrypt the control words.

3. A video signal distribution system according to Claim 2, wherein the video stream source (10) is arranged to insert encryption control messages (ECM's) in the data stream among the encrypted video signal, at least part of the encryption control messages (ECM's) containing both an encrypted control word and the key information.

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4. A video signal distribution system according to Claim 3, wherein the key information that is comprised in particular ones of the encryption control messages (ECM's), together with the secret information serves to decrypt the encrypted control word information in the particular ones of the encryption control messages.

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5. A video signal distribution system according to Claim 2, wherein the stream contains encryption control messages (ECM's) that include a respective one of the encrypted control words and at least part of the fee information, the control word derivation unit (125) being arranged to reduce the amount of credit according to the fee information in a respective 15 one of the encryption control messages (ECM's) in conjunction with supplying a control word decrypted from the respective one of the encryption control messages (ECM's).

6. A video signal distribution system according to Claim 1, wherein the control word derivation unit (125) and the credit management unit (128) are contained in an access 20 control device (124) that is detachably coupled to the video signal decryption device (121), so that the credit information is retained in the access control device (124) when the access control device (124) is detached from the video signal decryption device (121).

7. A video signal distribution system according to Claim 1, wherein the access 25 control device (124) is a smart card.

8. A video signal reproduction apparatus (12), the apparatus comprising
- a reception input (120) for receiving a data stream that contains an encrypted
video signal, control word information for decrypting the video signal and fee information
30 indicative of fees for viewing respective parts of the video signal;
- a control word derivation unit (125) having an input coupled to the reception
input (120) and a control word output, and arranged to supply control words derived from the
control word information;

- a video signal decryption device (121) having a video input coupled to the reception input (120) and a control word input coupled to the control word output, and arranged to decrypt the video information using the control words;
- a credit management unit comprising a credit memory (128), and arranged to provide enabling control information to enable or disable supply of the control words, dependent on whether the credit memory (128) indicates the availability of more than a threshold amount of credit, and to reduce the amount of credit in the credit memory (128) according to the fee information for the part of the video signal for the decoding of which the control words are supplied.

10 9. A video signal reproduction apparatus according to Claim 8, wherein the stream contains encryption control messages (ECM's), at least part of the encryption control messages (ECM's) containing both an encrypted control word and key information, the control word derivation unit (125) being arranged to determine a derived key from key information in a particular one of the encryption control message (ECM's) and secret information in the video signal reproduction apparatus and to decrypt the encrypted control word from that particular one of the encryption control messages (ECM's) with the derived key.

15 10. A video signal reproduction apparatus according to Claim 8, wherein the stream contains encryption control messages (ECM's) that include a respective one of the encrypted control words and a part of the fee information, the control word derivation unit (125) being arranged to reduce the amount of credit according to the part of the fee information in a particular one of the encryption control messages (ECM's) when the control word from that particular one of the encryption control messages (ECM's) is used to decrypt video information.

20 11. A video signal reproduction apparatus according to Claim 10, wherein the control word derivation unit (125) is arranged to authenticate the encryption control messages using authentication information derived using secret information local to a secure device (124) that contains the control word derivation unit (125) and key information included in the encryption control messages (ECM's).

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12. A video signal reproduction apparatus according to Claim 8, wherein the control word derivation unit (125) has available a plurality of items of secret information, the stream containing item selection information, the control word derivation unit (125) being arranged to generate the derived keys from the key information, using the key information and a particular one of the items of secret information that is selected under control of the item selection information, the derived keys being used to decrypt the encrypted control words.

13. A video signal reproduction apparatus according to Claim 8, wherein the control word derivation unit (125) and the credit management unit are contained in an access control device (124) that is detachably coupled to the reception input and the video signal decryption device.

14. A video signal reproduction apparatus according to Claim 13, wherein the access control device (124) is a smart card.

15. A video signal reproduction apparatus according to Claim 7, comprising a sleep timer, the credit management unit being arranged to stop enabling supply of the control words and reducing the amount of credit when the sleep timer expires.

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16. A video signal reproduction apparatus according to Claim 15, wherein the credit management unit (125) is arranged to compare a reduction of the amount of credit that has occurred in a predetermined time period with a threshold value and to stop enabling supply of the control words and reducing the amount of credit in said time period when the threshold value is exceeded.

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17. A video signal reproduction apparatus according to Claim 8, having a user input for receiving password information, the credit management unit being arranged to enable supply of the control words and to reduce the amount of credit conditional upon input of a predetermined password at the user input.

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18. A video signal reproduction apparatus according to Claim 8, wherein the credit management unit is arranged to execute a selectable one of a plurality of user

selectable profiles that specify conditions for enabling supply of the control words and reduction the amount of credit.

19. A video signal reproduction apparatus according to Claim 8, comprising a receiver (120) arranged to extract the fee information from the data stream, a display device (122) coupled to the receiver and arranged to display information representing the extracted fee information, prior to enabling reduction of the credit information using the fee information and/or during decryption of the video information associated with the fee information.

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20. A method of reproducing a video signal the method comprising - receiving a data stream that contains an encrypted video signal, control word information for decrypting the video signal and fee information indicative of fees for viewing respective parts of the video signal; - 15 using control words to decrypt the video information; - using a smart card (124) to derive the control words from the control word information and to enable derivation and/or use of the control words for decrypting the video information - when a credit memory (128) in the smart card (124) indicates the availability of more than a threshold amount of credit, and to reduce the amount of credit in the credit memory 20 according to the fee information for the part of the video signal for the decoding of which the control words are supplied.

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21. A method according to Claim 20, wherein the stream contains encryption control messages (ECM's), at least part of the encryption control messages (ECM's) containing both an encrypted control word and key information, the method comprising determining, in the smart card (124), a derived key from key information in a particular one of the encryption control messages (ECM's) and secret information in the smart card (124) and to decrypt the encrypted control word from that particular one of the encryption control messages (ECM's) with the derived key.

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22. A video stream source apparatus (10), comprising - a video signal encryption unit (102), for encrypting a video signal for decryption with control words and including the encrypted video signal in a data stream;

- an encryption control message generator (104), for generating encryption control messages (ECM's) in the data stream, at least part of the encryption control messages (ECM's) comprising both an encrypted control word, key information needed to decrypt the encrypted control words and fee information indicative of a fee for using the encryption
- 5 control message (ECM).

23. A method of distributing a video signal, the method comprising

- generating a data stream that contains an encrypted video signal;
- including encryption control messages (ECM's) in the stream and inserting in

10 at least part of the encryption control messages (ECM's) both an encrypted control word and key information needed to decrypt the encrypted control words;

- including fee information indicative of fees for using the encryption control messages.